CLAIMS

1. A reverse rotation preventing electronic cam curve generating method of an electronic cam type rotary cutter control which prevents a reverse rotation of a rotary cutter when a cutting length is great,

wherein a critical cutting length L_{jag} from which an electronic cam curve passing through a point having an acceleration of 0 and a speed of 0 is obtained is previously calculated by setting a rotor diameter r of the rotary cutter, the number of blades M provided at regular intervals on a rotor, synchronizing speed coefficients β_1 and β_2 for regulating synchronizing speeds in cutting, and synchronizing angles θ_1 and θ_2 and is compared with a set cutting length L_{set} of a processed product which is set by an operator, and an electronic cam curve pattern for preventing a reverse rotation is generated to carry out a reverse rotation preventing control when the set cutting length L_{set} is greater.

2. The reverse rotation preventing electronic cam curve generating method of an electronic cam type rotary cutter control according to claim 1, wherein the critical cutting length L_{jag} is obtained by an equation of :

$$\theta_{cut}=\frac{2\pi}{M}$$

$$L_{jag}=r\frac{\theta_{cut}-\theta_1-\theta_2+\left\{\frac{3}{8}(\beta_1+\beta_2)-\frac{1}{4}\sqrt{\beta_1\beta_2}\right\}\cdot\left(\frac{\theta_1}{\beta_1}+\frac{\theta_2}{\beta_2}\right)}{\frac{3}{8}(\beta_1+\beta_2)-\frac{1}{4}\sqrt{\beta_1\beta_2}}$$

where r is a rotor diameter, M is the number of blades, β_1 and β_2 are the synchronizing speed coefficients, and θ_1 and θ_2 are the synchronizing angles.

3. The reverse rotation preventing electronic cam curve generating method of an electronic cam type rotary cutter control according to claim 1 or 2, wherein when a result of the comparison of the critical cutting length L_{jag} with the set cutting length L_{set} is $L_{jag} > L_{set}$ or $L_{jag} < L_{set}$, an electronic cam curve pattern for preventing a reverse rotation is created by setting the following parameter:

when $L_{jag} > L_{set}$ is set as,

$$T_{12}=\frac{T_C-T_{01}-T_{45}}{2}$$

$$T_{23}=0$$

$$T_{34}=\frac{T_C-T_{01}-T_{45}}{2}$$

$$\omega_1=\frac{2\pi}{T_{12}+T_{34}}$$

$$\omega_2=\frac{\pi}{T_{12}+T_{34}}$$

$$A=A$$

and

when $L_{jag} < L_{set}$ is set as,

$$\omega_1 = \frac{2\pi}{T_{jag}}$$

$$\omega_2 = \frac{\pi}{T_{jag}}$$

$$T_{12} = \frac{\pi - \alpha}{\omega_2}$$

$$T_{34} = T_{jag} - T_{12}$$

$$T_{23} = T_C - T_{01} - T_{12} - T_{34} - T_{45}$$

$$A = A_{jag}$$

4. The reverse rotation preventing electronic cam curve generating method of an electronic cam type rotary cutter control according to claim 3, wherein correction coefficients A and A_{jag} of a speed function and a position function, T_{jag} corresponding to L_{jag}, and a stop phase angle α are obtained as the correction coefficient A_{jag} for generating an electronic cam curve passing through a point having an acceleration of 0 and a speed of 0 such as,

$$A_{jag} = -V_L\left(\frac{\beta_1 + \beta_2}{8r} + \frac{\sqrt{\beta_1\beta_2}}{4r}\right)$$

the correction coefficient A from a cutting length set to an operation panel,

$$A = V_L \frac{\theta_{cut} - \theta_1 - \theta_2 - \frac{\beta_1 + \beta_2}{2r}\left(L_{set} - \frac{r\theta_1}{\beta_1} - \frac{r\theta_2}{\beta_2}\right)}{L_{set} - \frac{r\theta_1}{\beta_1} - \frac{r\theta_2}{\beta_2}}$$

, and

T_{jag} · α when a value set to L_{set} is equal to L_{jag}

from the following equation;

$$T_{jag}=\frac{L_{jag}-r\left(\frac{\theta_1}{\beta_1}+\frac{\theta_2}{\beta_2}\right)}{V_L}$$

$$\alpha=\mathrm{Tan}^{-1}\left\{\frac{\sqrt{\left(\beta_1+\beta_2+2\sqrt{\beta_1\beta_2}\right)^2-(\beta_1-\beta_2)^2}}{\beta_1-\beta_2}\right\}.$$

5. The reverse rotation preventing electronic cam curve generating method of an electronic cam type rotary cutter control according to any of claims 1 to 4, wherein the electronic cam curve divides one cutting and control cycle to be a reference into a large number of sections, and a speed function pattern and a position function pattern which are represented by an approximate equation through a trigonometric function for each of the sections are calculated in an identical algorithm respectively and a whole synthesis and generation is carried out.

6. The reverse rotation preventing electronic cam curve generating method of an electronic cam type rotary cutter control according to claim 2, wherein the critical cutting length L_{jag} is determined by one calculation

7. An electronic cam type rotary cutter control apparatus having a counter for pulse counting an amount of movement of a workpiece from a measure roll PG of a mechanical apparatus including a measure roll, a cutter roll and a feed roll and serving to carry out a work for

cutting the workpiece, a differentiating circuit for differentiating the count value to calculate a moving speed of the workpiece and to output the moving speed to a multiplier, thereby constituting a feedforward, a triangular wave generator for converting the count value into a triangular wave having an amplitude in a certain amount, a speed function generator for generating a cam curve speed pattern by a correction output of the triangular wave generator, a position function generator for generating a cam curve position pattern from the correction output of the triangular wave generator, a position loop constituting a feedback control based on the correction output of the position function generator and an amount of movement of a motor, and a speed controller for A/D converting and inputting a speed feedforward output of the multiplier and an output of the position loop and reading a value of the motor PG, thereby controlling a speed of the motor, and serving to prevent a reverse rotation of a rotary cutter when a cutting length of the workpiece is great, the apparatus comprising an electronic cam curve parameter setting unit having an operator unit for inputting a set cutting length L_{set} to a comparator and a cutter roll radius r, the number of blades M, synchronizing speed coefficients β_1 and β_2 and synchronizing angles θ_1 and θ_2 to a first calculator,

the first calculator for calculating a critical cutting length L_{jag} based on a value input from the operator unit, the comparator for comparing the cutting length L_{jag} thus calculated with the set cutting length L_{set}, a second calculator for setting A = A and calculating and outputting each of parameters of T_{12}, T_{23}, T_{34}, ω_1 and ω_2 in case of $L_{jag} > L_{set}$ and setting $A = A_{jag}$ and calculating and outputting each of the parameters of ω_1, ω_2, T_{12}, T_{34} and T_{23} in case of $L_{jag} < L_{set}$ based on a result of the comparison carried out by the comparator, and a setting unit for carrying out a write to the speed function generator and the position function generator in order to generate an electronic cam curve for preventing a reverse rotation based on each of the parameters output from the second calculator.